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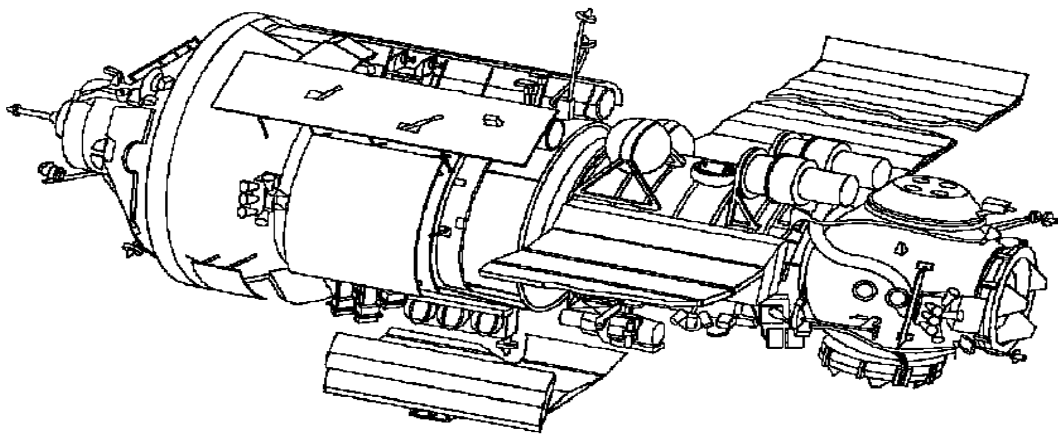
## FGB -- FUNCTIONAL CARGO BLOCK

### ***Modifications under way to enhance station's first element***

The Functional Cargo Block – known by the Russian acronym FGB – will provide the initial propulsion and power for the International Space Station (ISS) and become the first orbiting element of the station. The 20-ton pressurized spacecraft will be launched on a Russian Proton rocket in June 1998.

Under the direction of prime contractor The Boeing Company, Khrunichev State Research and Production Space Center (KhSC) in Moscow is adding enhancements to the FGB that include greater attitude control functions; orbital refueling potential at its nadir, or down-facing, docking port; upgraded avionics; and additional docking capabilities. The enhancements will provide additional backup capabilities for the early International Space Station.

"These modifications make the FGB a more robust vehicle," said Michael Wood, Boeing FGB deputy program manager. "Additional attitude control and avionics will maintain the station in the assembly as components are added.



Flight 1A/R - Functional Cargo Block (FGB)

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Modifications to the aft port will allow docking of either the Russian Service Module (SM) or an interim control module.”

Other mods include the refueling system to allow the FGB to accept fuel at its nadir port from the Progress, a Russian logistics re-supply vehicle, in the absence of the SM, a key station element that must work in concert with the FGB. Without this modification, fuel reception, storage and distribution would occur only when the SM is present through the FGB’s aft port.

Also, power will be added at the nadir port for a Soyuz crew return vehicle or a Progress vehicle.

As assembly continues, the FGB will provide orbital control, communications and power for the U.S.-built Node 1 that will be launched in July 1998. During this period, the FGB will control the motion and maintain the altitude of the station’s orbit. During the initial construction phase, the FGB will generate and distribute electrical power and provide ground communications. In the later phases of ISS assembly, the FGB will primarily provide storage capacity. In addition, its external fuel tanks will continue to be used throughout the lifetime of the station.

The FGB originally was planned for a November 1997 launch, but that launch target was delayed by eight months due to delays in construction of the SM.

In January 1998, the FGB will be transported from Moscow to the Cosmodrome launch complex in Baikonur, Kazakhstan, where it will undergo final checkout and testing, and be mated to the Proton rocket.

# # #

June 1997  
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## ***FGB - Countdown To Launch***

**April 1997**

### **Modifications begin at Khrunichev**

Attitude control, on-orbit refueling, upgraded avionics capability, and additional docking capabilities make the vehicle more robust.

**December 1997**

### **Integrated Testing Complete**

All electrical, functional and factory acceptance tests have been completed and the vehicle is made ready for shipment to the launch complex at Baikonur.

**January 1998**

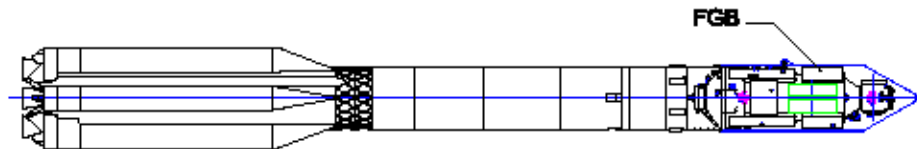
### **FGB shipped to Baikonur Launch Complex**

The FGB flight vehicle is transported by rail to the Cosmodrome launch complex in Baikonur.

**June 1998**

### **FGB Launch**

The FGB is launched into low-Earth orbit as the first element of the International Space Station.



Proton Launch Vehicle with FGB Payload

June 1997

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## FGB Technical Capabilities

The Functional Cargo Block – known by the Russian acronym FGB – which provides initial propulsion and power for the International Space Station (ISS), is the first orbiting element of the International Space Station. This 20-ton pressurized spacecraft will be launched on a Russian Proton vehicle in June 1998.

As assembly continues, the FGB will provide orbital control, communications and power for the U.S.-built Node 1 that will be launched in July 1998. During this period, the FGB will control the motion and define the altitude of the station's orbit. During the initial construction phase, the FGB will generate and distribute electrical power and provide ground communications. In the later phases of ISS assembly, the FGB will primarily provide storage capacity. In addition, its external fuel tanks will continue to be used throughout the lifetime of the Station.

### FGB PERFORMANCE:

Length (end-to-end)	41.2 feet
Width (at widest point)	13.5 feet
Gross launching mass (pound mass (lbm))	51,800
Orbital mass (lbm)	42,600
Orbital operation lifetime	no less than 15 years
Target orbit inclination	51.6 degrees
Reference orbit altitude (mi):	maximum
	minimum
Docking orbit altitude (mi)	218

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June 1997